

PCAS 15 (2012/2013)

**Supervised Project Report
(ANTA604)**

Title: Small Group Dynamics in remote field camps of NZ and Antarctica

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Abstract:

This report gives the results of a survey on group dynamics of 40 participants with varying experience who have been involved in field work in remote locations. These results showed no significant differences between leaders and non leaders or between productive and enjoyable factors. However all groups did rank 'considerate' as the most critical necessary characteristic and 'dominating personality' as the most critical irritating behaviour. 'Tolerance of others' was the most critical factor for enjoyable fieldtrips. Further research is required with a larger number of participants, to confirm these trends.

Four case studies of interesting group dynamic situations are outlined: Adventure Tourism Guiding, South Pole Expeditions, Raoul Island, and Auckland Island South Right Whale project. These are based on interviews with key people and personal experience. Common factors from the survey and the case studies are discussed and recommendations for improving group dynamics in the field are made.

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Introduction

In the 1940s, Kurt Lewin noted that people take up roles and behaviours when they work in a group. He then termed “group dynamics” as the effects of these roles and behaviours on other members and the group as a whole. Cartwright and Zander (1968, p 7) expanded the definition to “a field of inquiry dedicated to advancing knowledge about the nature of groups, the laws of their development, and their interrelations with individuals, other groups and larger institutions”. When the dynamics are positive, a group works well together however, when they are poor, the effectiveness is reduced.

From early times leadership and group dynamics has been a key factor in life and survival in Antarctica and the Southern Oceans. In 1864, the *Grafton* and the *Invercauld* shipwrecked on the Auckland Islands at the same time. The fates of the crew of the ships was very different. The *Invercauld*'s crew spent 12 months on the island with a death rate of 84% and were eventually rescued. The *Grafton*'s crew all survived nineteen months and rescued themselves (Learmonth and Tabakroff, 2013). The success of the *Grafton* crew was put down mostly to one crew member, Francois Raynal, and his ingenious ability to make things (he made a furnace and bellows to manufacture nails) and his efforts to make sure everyone got on.

During the Heroic Era of the early 1900's several expeditions went to Antarctica to explore, collect scientific data and stake a claim to the Antarctic continent for their home nations. Their accounts of their journeys include amazing feats of endurance and survival but there was also tragic loss of life (Mawson 1915, Blackhall 2012). The men's group dynamics played an important part of their ability to live with each other for such long periods in what was a very extreme environment. Shackleton in particular, is often referred to as one of the great leaders for his ability to keep all of his men alive after their ship 'Endurance' was crushed by sea ice. A list of Shackleton's leadership lessons are given in Appendix 1.

So why do some groups work well together and others not? Polar psychology has been studied and reviewed quite thoroughly (Taylor 1987, Suedfeld 1991, Palinkas 2003, Sandal et al. 2006, Sarris and Kirby 2007) partly because of funding by National Aeronautics and Space Administration (NASA) and its relevance to the isolated and confined environment that astronauts living in space stations endure. Antarctic studies have shown the greatest source of stress is the result of interpersonal conflict and tension (Palinkas, 2003). They found that a desire for affection was more common in people who scored low in task ability, emotional stability, social compatibility and overall performance. These people also showed a high level of boredom at screening. How people divide themselves up is also important. Individuals that formed cliques report more depression, anxiety, anger fatigue and confusion than individuals belonging to groups with a core-periphery structure (Palinkas, 2002).

People older than 30 do better than younger people because they have a higher tolerance to boredom and can cope better with not being able to achieve goals (Steel, 2014). Taylor (1985) concluded that the most stable and experienced people should be selected to overwinter, as they will be least likely to become self centred, dissatisfied, preoccupied and inefficient. Other qualities such as self-sufficiency, decisiveness, intelligence, the ability to work alone, good communication skills, assertiveness and independence are also favourable (Palinkas 1992, Taylor 1987). Unfortunately these types of people are not always the ones that apply to work in remote and isolated locations.

Organisations, such as Outward bound, focus on ways to encourage positive group dynamics by using the outdoor environment and team building exercises. “The reason that groups begin to knit into intimate or high-functioning teams so predictably in the outdoors is because of the inherent stresses and rewards – as well as forced intimacy – of a backcountry expedition.” (Outward Bound, 2007, p 164). Programs based in wilderness settings are also effective for creating development of well-functioning and interactive groups, skilled in solving issues as they happen. Given a challenge that is right for you is a good thing for most people (Ewert and Heywood, 1991).

Muzafer's 1954 'Robbers Cave Experiment' (reviewed in Learmonth and Tabakroff, 2013) on 22 middle class boys camping in the bush, showed that if group dynamics are just left to themselves, the group quickly escalates into disorder and violence. This raises the question whether the natural behaviour of groups has a tendency to be confrontational rather than peaceful – especially with young boys. Though this example is extreme, issues related to poor group dynamics are common in many work places. A 1996 study found that 70 – 80% of critical incidents in medical operating rooms were due to team/interpersonal interactions among the operating team (Sexton et al., 1996). Accidents and mistakes occur more often if people are not getting on well. Having healthy group dynamics is especially important to organisations that run field trips to remote locations such as the Department of Conservation (DoC), Antarctica New Zealand, and Universities, as they cannot get outside help or intervention easily.

This report gives the results of a group dynamics survey of 40 participants with varying experience of working in remote and isolated locations. These results are then analyzed for trends. Four case studies of interesting group dynamic situations are outlined: Adventure Tourism Guiding, South Pole Expeditions, Raoul Island, and Auckland Island South Right Whale project. These are based on interviews with key people and personal experience of the author. The results of the survey and information from case studies are discussed. Recommendations for improving group dynamics in remote field situations are made.

Method

Group Dynamics Survey

The survey required Human Ethic approval from the University of Canterbury, as its contents involved sensitive human relationship issues. The survey was completely anonymous and all surveys and raw data will be destroyed after the completion of this report. A copy of the survey, consent form and information sheet is given in Appendix 2. All people surveyed had to have spent time working in remote and isolated environments with a small group of people.

The survey was divided into five sections. Section 1 (Questions 1 to 6) gathered information on the experience and demographics of the participants. Type C and Type F descriptions represent the general behaviours of introverts and extroverts respectively. Section 2 looked at six human characteristic people see as necessary for working in a group in remote environments. Section 3 asked participants to score five irritating behaviours. Section 4 looked at a range of factors related to management, conditions and people, and asked

participants to score them on how important they are firstly for a productive fieldtrip and secondly for a enjoyable fieldtrip. The last section of the survey asked participants to share anything else related to positive factors in group dynamics when working in remote environments.

The factors looked at were chosen based on what had been used in other Antarctic psychology studies such as the big five personality characteristics of the circumpolar sojourner (Steel et al., 1997), and the three abilities rating performance (Steel, 2014), and from the authors experience with guiding and working in remote locations¹. Supervisors, Daniela Liggett and Gary Steel also gave input.

A 0 to 7 scoring scale was used for the survey representing answers from not to somewhat to very to critical. In each section participants were able to add other factors that they also felt were important and then score these.

The survey was emailed to previous Postgraduate Certificate in Antarctic Studies (PCAS) students, scientist and students at Gateway Antarctica, and scientists who were on the Gateway Antarctica email list who had interests in Antarctica. The survey was given out to the present PCAS 13/14 students at the end of the Antarctic field trip. A group of contractors working on a kea project in Kaikoura were also given the survey.

ANALYSIS

Raw data from surveys was entered into an excel spreadsheet. This was then looked at in three ways.

1. Discriminant Analysis

Data was imported into a statistical package to do discriminant analyses. Firstly focus was made on the leadership experience dimension and three preliminary analyses were run. Predictor variables were grouped into social variables, facility variables and operational/procedure variables. This analysis tells if these variables can reliably be separated into either leader or not leader. Secondly, factors from question 9 on what make productive and enjoyable field trips were grouped as Management (productivity), Management (enjoyment), Conditions (productivity), Conditions (enjoyment), Social (productivity), and Social (enjoyment) and analysed for any distinction between groups.

2. Trends in Scoring

Averages for the factors for the different sections (Necessary Characteristics, Irritating behaviours, Productive Fieldtrip, Enjoyable Fieldtrip) of the survey were calculated for the different demographics of the participants (Sex, Leader, Age, Number Team Members, Location, Type and PCAS). They were then ranked from the highest average (indicating most critical) to lowest. The top three factors for each section for each demographic group and how many times a factor came up in the top three or four were then tabulated.

Descriptive Information

¹ The author has spent over 1000 days guiding approximately 600 clients on small group multi-day hiking safaris. He has also been involved in 16 volunteer conservation projects in remote areas of the world.

Factors added in the 'other box' for the four sections of the survey were collated as these represented factors that may have been missed but are also of importance. Comments from the more experienced team leaders and members were listed and studied for further insight into what makes good group dynamics. This was also done for the PCAS 13/14 group.

Group Dynamics Case Studies

Four case studies (Adventure Guiding, Antarctic Expeditions to the South Pole, Raoul Island and Auckland Island) were made based on interviews with key people and from my own experience. Key points relating to group dynamics were listed for each of these case studies. Trends from the surveys and key points from the case studies, together with items from Shackleton's leadership style (Appendix 1) were used to make up a list of group dynamic recommendations for field work in remote locations.

Results

Group Dynamics Survey

Only 40 people responded to the survey. Initial plans to survey Department of Conservation (DoC) field workers and Antarctica New Zealand personnel were prevented by University of Canterbury Human Ethics requiring approval from head office of these two organisations. Due to the limited time of this project this was not feasible.

Discriminant Analysis

None of the social variables, facility variables and operational/procedure variables significantly discriminated between leaders and non-leaders. No reliable distinction between Management factors, Conditions factors and Social factors for productivity and enjoyment can be made.

Trends in Scoring

A considerable amount of time was spent crunching data on excel spreadsheets to look for trends. The main results are shown in Table 1 with highlighted areas indicating three interesting trends. Question 7: *To what degree do you find these human characteristic necessary when working in a group in remote environment*, gave six factors (Considerate, Agreeable, Conscientious, Sociable, Competent in ones job and Emotional stability) to score between 0 (not) and 7(critical). In all 13 groups we looked at 'considerate' got the highest average score, overall averaging 6.25. Similarly for question 8 relating to *irritating behaviours*, all 13 groups gave 'dominating personality' the highest average score, overall averaging 4.8 (the other four were; poor hygiene, poor language, untidiness and noisy). For enjoyable field trips, 11 of the 13 groups rated 'tolerance to others' with the highest average score and overall average 6.4 (see appendix of the questionnaire to see the other 19 factors surveyed). The lowest scoring factor on average was 'even sex ratio' for productive fieldtrips followed by 'even sex ratio' for enjoyable fieldtrips. Poor language and shared culture values followed next, indicating these factors were of least concern to the participants surveyed.

A summary of Table 1 is given in Table 2 by looking at how many times a factor comes up in the top 3 rankings for Necessary Characteristic and Irritating Behaviours and the top 4 rankings for Productive and Enjoyable fieldtrips. The highlighted factors come up 10 or more times and therefore could be considered key factors.

Table 1. The top ranking factors for the four sections of the survey divided into groups.

Group	Sex				Leader				Age				# Team Member				Location				Type				PCAS 13/14		Overall		
Rank	Male	Av	Female	Av	Yes	Av	No	Av	18 to 30	Av	>30	Av	1 to 10	Av	>10	Av	Other	Av	Antarctica	Av	C	Av	F	Av		Av		Av	
n		19		21		22		18		18		22		20		20		8		32		29		11		14		40	
Necessary	1	Consid	6.11	Consid	6.38	Consid	6.32	Consid	6.17	Consid	6.17	Consid	6.32	Consid	6.15	Consid	6.35	Consid	6.5	Consid	6.19	Consid	6.17	Consid	6.45	Consid	6.14	Consid	6.25
	2	E.Stab	6	Compet	6	E.Stab	5.91	Compet	6	Consci	5.83	Compet	6.09	Compet	5.95	E.Stab	5.75	Consci	6.13	Compet	5.75	Compet	5.79	E.Stab	6.09	Consci	5.5	Compet	5.82
	3	Compet	5.63	Consci	5.95	Compet	5.68	E.Stab	5.56	Compet	5.5	E.Stab	6.05	Consci	5.85	Consci	5.75	Compet	6.13	E.Stab	5.72	Consci	5.72	Consci	6	E.Stab	5.43	Consci	5.8
Irritating	1	Domin	4.95	Domin	4.71	Domin	4.59	Domin	5.11	Domin	4.89	Domin	4.77	Domin	5.2	Domin	4.45	Domin	5	Domin	4.78	Domin	4.93	Domin	4.55	Domin	5.14	Domin	4.8
	2	Untidy	4.68	Noisy	4.24	Untidy	4.23	Noisy	4.89	Untidy	4.33	Noisy	4.68	Noisy	4.3	Untidy	4.2	Untidy	4.63	Noisy	4.44	Noisy	4.83	Untidy	4.18	Noisy	4.79	Noisy	4.4
	3	Noisy	4.58	Untidy	3.86	Noisy	4	Untidy	4.28	Noisy	4.06	P.Hygie	4.32	Untidy	4.3	Noisy	3.6	Noisy	4.25	Untidy	4.16	Untidy	4.28	P.Hygie	4	Untidy	4.07	Untidy	4.25
Productive	1	Training	6.11	C.Goals	6.57	Leader	6.32	C.Goals	6.5	Tol	6.28	Safety	6.41	C.Goals	6.4	Leader	6.4	Safety	6.38	C.Goals	6.41	C.Goals	6.31	Leader	6.82	Tol	6.43	C.Goals	6.3
	2	Leader	6.11	Leader	6.43	Safety	6.18	Perform	6.28	Perform	6.28	Leader	6.36	Tol	6.25	Safety	6.3	D.Jobs	6	Leader	6.38	Safety	6.14	Safety	6.45	C.Goals	6.43	Leader	6.27
	3	Safety	6.05	Perform	6.38	C.Goals	6.14	Safety	6.28	C.Goals	6.28	C.Goals	6.32	Training	6.25	C.Goals	6.2	Training	6	Training	6.19	Leader	6.07	Training	6.45	Leader	6.36	Safety	6.22
	4	C.Goals	6	Safety	6.38	Training	6.05	Training	6.28	Leader	6.17	Training	6.23	Perform	6.15	Training	6.05	Checks	5.88	Safety	6.19	Training	6.03	Perform	6.36	Safety	6.29	Training	6.15
Enjoyable	1	Tol	6.16	Tol	6.62	Tol	6.41	Tol	6.39	Tol	6.61	Tol	6.23	Tol	6.4	Tol	6.4	Compat	6.38	Tol	6.47	Tol	6.38	Compat	6.45	Tol	6.64	Tol	6.4
	2	NLIBU	6	Leader	6.29	NLIBU	6.36	Relax	6.17	Compat	6.39	Relax	6.09	Sleep	6.25	NLIBU	6.25	D.Jobs	6.13	Relax	6.13	NLIBU	6.1	Tol	6.45	Relax	6.29	NLIBU	6.1
	3	Compat	5.95	Relax	6.24	Compat	6.09	Sleep	6.17	NLIBU	6.22	NLIBU	6	Relax	6	Compat	6.25	Tol	6.13	NLIBU	6.13	Relax	5.93	Leader	6.36	G.Food	6.29	Compat	6
	4	G.Food	5.89	NLIBU	6.19	Leader	6.09	G.Food	5.94	Social	6	G.Food	5.86	NLIBU	5.95	Leader	6.1	NLIBU	6	Leader	6	G.Food	5.86	Perform	6.27	Social	6.21	Relax	5.95
Av			5.73		5.87		5.74		5.86		5.79		5.84		5.81		5.72		5.82		5.78		5.75		5.92		5.86		5.77

Abbreviations: Consid = Considerate, E. Stab = Emotional stability, Compet=Competent in ones job, Consci=Conscientious, Agree=Agreeable, Domin=Dominating personality, P.Hygie = Poor Hygiene, P.Lang=Poor language, Leader = Good leadership, Safety= Good safety and risk management, C.Goals = Clear goals, Perform=Performance of group members, Tol=Tolerance of others, D.Jobs=Sharing domestic jobs, NLIBU = Not letting Issues build up, Compat=Compatible people, Relax=Relaxation time/Time for self, G. Food=Good food, Social=Social activity/Time with others, E.Sex R=Even sex ratio, Culture=Shared cultural values, RdBrief=Regular debriefings, R. Brief=Regular briefings, n=number surveyed, Av = Average scores for group in survey.

Table 2. The number of times a factor came up in Table 1 for the various sections.

Necessary		Irritating		Productive		Enjoyable	
Considerate	13	Dominating Pers	13	Good Safety & RM	11	Tolerance of others	13
Competent in job	10	Untidy	12	Clear Goals	11	NLIBU	10
Emotional Stability	8	Noisy	12	Good Training	10	Relaxation time	7
Conscientious	8	Poor Hygiene	2	Good Leadership	10	Compatible people	6
				Performance group	5	Good Leadership	5
				Tolerance of others	3	Good Food	5
				Checklist	1	Social activity	2
				Sharing Domestic	1	Enough Sleep	2
						Performance group	1
						Sharing Domestic	1
Tot	39		39		52		52

Table 3 shows the 10 highest averages of the factors across all surveys. No irritating behaviours feature on this list and only one necessary characteristic. Tolerance of others for an enjoyable fieldtrip scored the highest average indicating it could be one of the most critical factors. All of these factors averaged higher than six (except relaxation time at just below) and so indicate they are all of importance to the participants surveyed.

Table 3. Overall top 10 ranking factors and their average scores for all sections combined.

Group	Top 10 All	Av
E	Tolerance of others	6.4
P	Clear Goals	6.3
P	Good Leadership	6.27
N	Considerate	6.25
P	Good Safety and RM	6.22
P	Good training	6.15
E	Not letting issues build up	6.1
P	Performance of group members	6.02
E	Compatible people	6
E	Relaxation time/Time for self	5.97

E=Enjoyable, P=Productive, N=Necessary Characteristics

Table 4. Other factors listed by participants as important for the various sections. # = the number of different people that mentioned these factors. Av = Average score.

Other Necessary Characteristics	#	Av	Irritating Behaviours	#	Av	Productive and Enjoyable	P	E
Honest	4	7	Bullying	1	7	Calm atmosphere	5	7
Good communicator	1	7	Not pulling weight	1	7	lectures by guests	7	7
Fun Team Player	1	7	Annoying	1	7	External Contact	7	7
Helpful	1	7	Disregard for others	1	7			
Flexibility	3	6.3	Hurrying	1	7			
Interested in what doing	1	6	Unaccountable for actions	1	6			
Creative	1	6	Selfishness	3	6			
Physically Fit	1	6	Close minded	1	6			
Sense of humour	1	6	False	1	6			
Enthusiastic	1	4	Moodiness	1	6			
Self absorption	1	4	Irritating habits	1	6			
			Not contributing	1	6			
			Easily distracted	1	6			
			Not Team player	1	6			
			Immaturity	1	6			
			Disorganised	2	5.5			
			Rudeness	1	5			
			Lack of interest	1	5			
			Reckless	1	3			

Highlighted areas of Table 4 show factors that have been brought up by 2 or more people in the other box in the survey. These factors are likely to be of importance and should be used in any future surveys.

Descriptive Information

Many of the comments from Question 10 of the survey give valuable insight into group dynamics and so have been condensed into Table 5 and 6.

Experienced Leaders/Team Members

Table 5. Experienced leaders/team members answers to Question 10 relating to other possible factors for good group dynamics.

# Leader	# Team	Comment
>20	>20	<i>"Some redundancy to allow for delays if they happen. People knowing why they are doing things and how accurate. Good leadership – all follows. Indecision, confusion or constant changes due to uncertainty erode good group dynamics. Decisive action with input from others."</i>
11-20	>20	<i>"Sense of humour is a helpful trait that affects how easy it is to be compatible with others and tolerant of others."</i>
6-10	11-20	<i>"Communicate when going well and not well. Good and enough food and sleep for hard field days. Booze helps social times. Time off to recoup is very valuable for effective working."</i>
6-10	0	<i>"Tolerance most important. Leadership firm but conscious of how people are changing. Not a time for argument in remote areas"</i>
1-5	>20	<i>"Open, polite, friendly and honest communication is vital especially when communicating a perceived negative. A positive outlook if vital as is a smile and happiness!"</i>
1-5	>20	<i>"Ability to tolerate and not hold grudges. Remember what they are there for and get on with job. Maturity in attitude. Were hierarchy, important that all seen to contribute. Domestic duties are good example of tasks that should be done by all"</i>
1-5	11-20	<i>"Clear roles for everyone. Working hard but not too hard. No interpersonal competition. Good teamwork when necessary. Good humour but not forced."</i>
1-5	6-10	<i>"Good communication is key to good group dynamics. Leader must be fair and safe. Priority for decisions and activities needs to be based on scientific goals."</i>

It is interesting to note that communication, tolerance and humour have been mentioned by more than one experienced leader/team member.

Postgraduate Certificate in Antarctic Studies 13/14

The group dynamics of the PCAS 13/14 field trip to Antarctica was generally described as very good. The following comment was written on one student's Facebook pages.

"just wanted to let you all know that i had a blast of a summer with you all and that i treasure the friendships we all have made more than the trip to Antarctica (And that is saying something!!)"

Student comments from the survey on how to improve group dynamics can be seen in Table 6. It is interesting to note that many of the comments are related to people and enjoyment while comments from Table 5 by experienced leaders/team members relate to productivity and management.

The leader of the field trip attributed the fact that the PCAS group all got on so well to:

1. Lack of dominating personalities (previous year everyone wanted to be leaders).
2. More flexibility at Scott Base.
3. Better communication (giving students more information on planning, pointing out things straight away so no surprises).
4. Emphasis on appropriate behaviour at Scott Base.
5. Discussions with co-leaders on how everyone was going.

The leader commented that there are no official procedures regarding group dynamics for field trips from the University of Canterbury other than general health and safety.

Table 6. PCAS 13/14 answers to Question 10 relating to other possible factors for good group dynamics.

1	<i>"Respect, friendship, laughter, happiness"</i>
2	<i>"Someone needs to be conscious of how their actions make others feel (eg uncomfortable). People need to understand how load they are speaking"</i>
3	<i>"Shared ideas of why they are there and what they are doing, People should be quiet and use indoor voices even when outside. Everyone pulling their weight with jobs."</i>
4	<i>"Having people who accept the environment they are in for what it is and enjoying it, like mindedness"</i>
5	<i>"even/close ages can benefit groups and/or people at similar stages. Important for both understanding each other and for ensuring that everyone's mindset is similar."</i>
6	<i>"Good humour, a humble mind and eagerness to work and do what you are there for are key."</i>
7	<i>"Group size makes a difference. In groups of 7 or 8 people, everyone can interact. Any more than this and people start to form groups which isn't always a good thing."</i>
8	<i>"A sense of humour and easy-going personality will always help."</i>
9	<i>"Allowing team members to be involved in making choices eg. Choose own tent buddy/kitchen groups. Rotation of team leader role for activities."</i>
10	<i>"If things are too regimented, enjoyment can decrease. It is important to allow some form of flexibility for some activities/days."</i>
11	<i>"highly motivated people, openness, freedom to go for walks."</i>

Group dynamic Case Studies

Case Study 1. Adventure Tourism Guiding

Managing group dynamics on a tourism venture is important as people are paying to have a good time and the business is reliant on them spreading the word or coming back for more trips. The author setup and managed Hiking New Zealand for 20 years. Its core business was to take groups of 8-11 people on 11 day safaris into remote areas of New Zealand's National Parks. Hiking New Zealand won four tourism awards including the Distinction Award. Some of the key ways Hiking New Zealand managed group dynamics were:

1. Group introduction session around campfire on first night. Clients talk about themselves for three or four minutes. Guides encourage any shyer clients with questions. This helps people make connections with each other.
2. Everyone helps with domestic jobs. A roster is used and people are rotated so they get to work alongside most of the members of the group.

3. Guides discuss group dynamics on day one. 'We live out of each other's pockets and need to be tolerant. If there are any issues to come and see the guide straight away, not at the end of the trip.'
4. Team building games break down barriers and help people feel comfortable with each other. A list of some of these can be found in Appendix 3.
5. Magic moment stories. Usually after five or six days we get clients to tell the group an interesting, special story from their life. This is anything from viewing wildlife up close to special family moments like the passing away of a loved one.
6. Challenge of reaching the top of a mountain and the release of endorphins gives a great natural high to everyone.
7. Identifying potentially problem clients at the beginning of a trip and spending time with them to win them over. If they like you, they will be easier to manage.
8. Briefings are given every night on what we are doing the next day. Safety briefings are given before every hike or activity.
9. Guides try to be one of the group most of the time, but when there are important safety decisions, they need to be clear that they are the leader.

Case Study 2. South Pole Expeditions

On the 7th February 2014, Ben Saunders and Tarka L'Herpiniere completed their 105 day, 1,795 mile expedition from Scott base to the South Pole and back. This was the longest polar man-haul in history. They required one food drop on their return journey as they were suffering from hypothermia and only had a half days ration to get 38 km to their next food stash. Discussion with them over how they got on gave the following pointers:

1. They knew each other for 12 years and had been on expeditions together.
2. They never let issues build up by talking about how things were going every few hours.
3. They made an effort to keep a very tidy tent.
4. Ben was clearly the leader for most of the trip as he raised the finance, however Tarka was the leader on the Beardmore Glacier as he had more experience on glaciers. This was clearly defined beforehand.
5. They only had two in party and definitely didn't want three because of group dynamic issues. They referred to the Peter Hillary 1999 expedition which went badly.
6. They did psychological testing before starting the expedition.

On Peter Hillary's expedition, described in his book "In the Ghost Country" the group dynamics collapsed. Instead of completing Scott's journey they were repeating it. There was fatal team chemistry and the expedition fragmented into hostile isolation. There was no clear leader. The other two party members ganged up on Peter making him feel like the outsider. He made efforts to have social time to discuss aspects of their lives but the other two were not interested and just retreated to their own worlds (Hillary and Elder, 2003).

Case Study 3. Raoul Island

Raoul Island, situated in the Kermadec Island group, 1000 kilometres northeast of New Zealand, is a nature and marine reserved managed by the Department of Conservation. Due to invasive weeds, DoC has staff and volunteers based on the island to control their spread. Due to the inaccessibility of the Island (3-4 day boat journey) workers usually stay on the island for a year at a time, making it probably the most isolated field camp managed by New Zealand. Staff and volunteers are told that they will not be evacuated from the island even in the event of a death within their family. Over the years groups not getting on has been a major issue and in recent years there has been 2 deaths (one 9 years ago when the crater

erupted and the other 2 years ago when a volunteer got washed off the rocks while taking a water temperature). Today considerable effort goes into the selection process for both DoC staff and volunteers that go to the islands. Paul Rennie from the Department of Conservation (previously with NZ Navy) whose job is to manage Raoul Island states "Certainly team dynamics is very important particularly with small teams in isolated environments and this is the area that we focus on getting right. The risk of not having it right is amplified by the isolation and the well being of individuals is hugely compromised. As I said yesterday we always send good people to Raoul but they don't always make good teams; therein lies the key." Paul Rennie, DoC email 26 Feb 2014.

Appendix 4 lists the interview questions for selecting Raoul Island crew. Major points from discussion with Paul Rennie are:

1. In the last two years DoC tried a new system to help select people for Raoul Island. Once they have shortlisted potential candidates to 7 or 8, they take them away for a week long field trip to assess how they get along. At the end of the trip they ask the candidates who they would choose to be part of their team of four. This information is then used to help decide who is picked and so far appears to be working well.
2. Group dynamics are harder to manage with groups of 8 than groups of 60.
3. The successful crew undergo conflict management training.
4. One of the most important abilities is being able to let issues go, even if you are sure you are right. It is your decision to let it go.

Case Study 4. Auckland Islands Southern Right Whale Census

For 6 weeks from June 1996 a group of 4 people including myself were part of the first winter expedition to the Sub Antarctic Auckland Island's to study Southern Right Whales. Though the scientific objectives of the expedition were met the overall enjoyment of the trip was lessened because of group dynamic issues. Discussion with another expedition member, Karen Baird (formally DoC) has outlined the following shortfalls:

1. No clear leadership appointed to anyone in the group.
2. Dominant personality who assigned themselves as the leader.
3. Cultural difference between more laid back kiwi style (3 of members) and more intense French Canadian way of doing things.
4. Members not revealing their depression issues before the trip as this may have prevented them from being included.
5. Not being able to discuss the issue as the dominating person was always present. We only realised that all 3 of us were feeling the same way at the end of the trip when things finally boiled over.
6. One person wanted the project to be their PhD so wanted to see all data and ended up getting very tired.
7. The following season the person had similar issues with other scientists they were with on the Auckland Is.

Discussion and Recommendations

Straight after abandoning the Grafton, Musgrave and Raynal immediately shared their tobacco with all of the men. At a later time, while playing cards, Musgrave lost his temper when he lost yet another game. 'Raynal knew that it was vital to keep discord to a minimum, so after a game which caused Musgrave and himself to exchange unpleasant words, Raynal threw the entire pack into the fire' (Learmonth and Tabakoff, 2013, p 133). Raynal new of the importance of group dynamics.

When asked to come up with an ideal model leader for astronauts working in space stations Lawrence Palinkas thought of Shackleton for his flexibility to admit defeat but also perform superhuman feats. "Flexibility or adaptability more than any other single trait is essential to living in extreme and isolated environments" (Palinkas quoted in Morrell and Capparell, 2001, p 212). Shackleton's consistently motivated his crew and his democratic style combated a major problem for isolated groups; the tendency to fragment into cliques. Effort should be made to avoid cliques from forming.

The best performers in Antarctica have been shown to have the lowest scores of baseline measures of extraversion and assertiveness (Palinkas, 2003). It is interesting to note that 29 of the 40 participants to the group dynamics survey rated themselves more as Type C which was aligned with introversion behaviour (Table 1). An interview with a scientist who had been down the Antarctica 23 times noted that he avoided taking people who had dominant personalities.

The discriminant analysis undertaken in this study between leaders and non leaders and between productive and enjoyable factors showed no significant differences because the sample of 40 was too small. To adequately address the number of variables in the survey, several hundred observations would be required to reach a minimum level of statistical power (Gary Steel, pers. comm., 2 March 2014). As a result it didn't warrant looking for differences in other groups such as male/ female or 18 to 30/>30 or introvert/extrovert. Instead focus on this study was put on looking for possible trends in scoring of factors for the different groups. Any outstanding trends may then warrant further research.

Looking at Tables 1-6, some of the key trends are:

1. Considerate was the most important necessary characteristic for a group. Honesty and flexibility were factors not listed but also thought as important by participants.
2. Dominating personality was the most irritating behaviour. Selfishness and disorganised were factors not listed but also thought as important by participants.
3. Good safety and risk management, clear goals, good training, and good leadership were the most important factors for a productive fieldtrip.
4. Tolerance of others and not letting issues build up were the most important factors for an enjoyable field trip
5. Performance of group members, compatible people and relaxation time/time for self, were other factors that scored highly.
6. Communication, tolerance and humour feature multiple times in comments from experienced leaders/team members.
7. Humour and noise feature multiple times in comments from PCAS 13/14 members.

Taylor (1987) put together a list of pointers for winter-over and summer personnel based on his studies of Antarctic Psychology (Appendix 5). From the findings of this survey and the case studies described above, and from Shackleton's leadership points (Appendix 1) a similar list of recommendations for achieving healthy group dynamics has been formulated. This will hopefully be of value to organisations like the Department of Conservation, University of Canterbury and Antarctica New Zealand who regularly have small groups in remote field locations.

Recommendations for healthy group dynamics

1. Have a clear leader. Different people can be leaders at different times but define when these times are before you go. Realise there are different leadership styles. Quiet unassuming people often make good leaders.
2. Have clear goals for the field trip and make sure everyone knows them. Safety and risk management should be the number one goal.
3. Clearly define the team members roles and responsibilities.
4. Clear and precise communication (e.g. this needs to be done by this time) will avoid misunderstandings and ill feelings. Don't rely on memory. People should be writing things down and important safety procedures should have checklists.
5. It is important for everyone to get to know each other well so they can understand people's situations and be more tolerant. A group introduction session and social time help this.
6. Be considerate. Little things can mean a lot. Be organised, tidy, keep the noise down, polite, be aware that things you do may be irritating to others. It never hurts to ask does this bother you.
7. Discuss irritating behaviours as many can easily be addressed. People with dominating personalities need to know that this is a common dislike and should make an effort to let other people have their say.
8. Team building events, like heading away for a weekend and being involved in team games, will assist people to feel comfortable with the group. The challenge of overcoming something together, like a tramp, brings people together.
9. Actively manage group dynamics and how to improve it with your group. Observe how the group interacts. Many behaviours that lead to poor group dynamics can be overcome if you catch them early. Keep problem people close to you if you are a leader (Shackleton did this).
10. Good honest communication is crucial. Briefings and debriefings are good ways to get information to and from your group. How people are feeling generally should be part of a debrief as this will give people an opportunity to get stuff off their chests and not let issues build up.
11. Everyone should be involved in domestic jobs as much as possible. This reinforces to people that you are all equals.
12. Humour is a great way to relieve tension in a group and can be a way of getting a message across in a non confrontational way.
13. Mix people to avoid the formation of cliques as these can be the start of trouble.
14. Make time for social time and relaxation time. Don't underestimate its value as time to recoup.
15. Take an interest in your team mates and have some compulsory group activities.

16. Don't work people too hard. An enjoyable trip will often be a more productive trip in the long run. People will want to come back again and there will be less time spent on recruitment and training.
17. Learn to let issues go, even if you are right!

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Appendix 1. Shackleton's Leadership Points

From Shackleton's Way (Morrell and Capparell, 2001)

1. Relaxation and entertainment were critical parts of the schedule Shackleton orchestrated. One of Shackleton's team building exercises was having the men walking around in a line with their right hand on the shoulder of the man in front of them.
2. He was scrupulously even-handed in all his dealings with the crew.
3. Shackleton rotated work assignments so that over time each man worked alongside all others, blurring divisions.
4. Shackleton broke down traditional hierarchies by having everyone pitch in to do the work on the ship.
5. He made himself accessible to his crew, listened to his men's concerns, and kept them informed about the ship's business.
6. Shackleton insisted on healthy diet, exercise, and reasonable safety measures, believing physical and mental acumen were closely related.
7. He gave his men constant feedback, praising efforts and correcting their mistakes.
8. Shackleton held small celebrations that recognised the individual.
9. He was tolerant of people's quirks and foibles.
10. He made contingency plans in great detail while still remaining flexible.
11. Shackleton believed Hussey's Banjo was "vital mental medicine" and must be taken.
12. Shackleton kept the malcontents close to him to contain their effect and try and win them over.
13. He made sure the men didn't lose their sense of humour.
14. Shackleton sought out advice but made final decisions alone.
15. He prepared the men for unpopular orders by giving warnings far in advance.
16. Shackleton let go the past and didn't waste time or energy regretting past mistakes or fretting over what he couldn't change.
17. He headed the best and biggest boat and picked the weakest crewman to accompany him.
18. Shackleton wasn't afraid to change his mind as often as the situation dictated.
19. Shackleton had developed a reservoir of personal strength that sustained him through worst struggles.

When completing the survey please think about factors that were important when you have been in remote, isolated, and sometime extreme environments and NOT just your normal everyday life.

1. Age Group: 18-25 26-30 31-40 41-50 51-60 >60 **2. Sex:** Male Female

The University of Canterbury Antarctica New Zealand Other (State):

5. Have you ever acted in the capacity of a group leader in a remote field camp? Yes No

1-5 times 6-10 times 11-20 times >20 times

1-5 times 6-10 times 11-20 times >20 times

Type C

- Think/reflect first, then act
- Regularly require an amount of "private time" to recharge batteries
- Motivated internally, mind is sometimes so active it is "closed" to outside world
- Prefer one-to-one communication and relationships

Type F

- Act first, think/reflect later
- Feel deprived when cut-off from interaction with the outside world
- Usually open to and motivated by outside world of people and things
- Enjoy wide variety and change in people relationships

18

9. From your experience of living in remote and isolated environments, how important are the following factors for:

a. a productive fieldtrip

b. an enjoyable fieldtrip

	(a) Productive									(b) Enjoyable								
	Not	Somewhat			Very	Critical				Not	Somewhat			Very	Critical			
Management																		
Good leadership	0	1	2	3	4	5	6	7	0	1	2	3	4	5	6	7		
Clear goals	0	1	2	3	4	5	6	7	0	1	2	3	4	5	6	7		
Regular briefings	0	1	2	3	4	5	6	7	0	1	2	3	4	5	6	7		
Regular debriefings	0	1	2	3	4	5	6	7	0	1	2	3	4	5	6	7		
Procedure/Equipment checklists	0	1	2	3	4	5	6	7	0	1	2	3	4	5	6	7		
Good training	0	1	2	3	4	5	6	7	0	1	2	3	4	5	6	7		
Good safety and risk management	0	1	2	3	4	5	6	7	0	1	2	3	4	5	6	7		
Conditions																		
Comfortable accommodation	0	1	2	3	4	5	6	7	0	1	2	3	4	5	6	7		
Enough sleep	0	1	2	3	4	5	6	7	0	1	2	3	4	5	6	7		
Good food	0	1	2	3	4	5	6	7	0	1	2	3	4	5	6	7		
Sharing domestic jobs	0	1	2	3	4	5	6	7	0	1	2	3	4	5	6	7		
Enough exercise	0	1	2	3	4	5	6	7	0	1	2	3	4	5	6	7		
People																		
Even sex ratio	0	1	2	3	4	5	6	7	0	1	2	3	4	5	6	7		
Performance of group members	0	1	2	3	4	5	6	7	0	1	2	3	4	5	6	7		
Tolerance of others	0	1	2	3	4	5	6	7	0	1	2	3	4	5	6	7		
Compatible people	0	1	2	3	4	5	6	7	0	1	2	3	4	5	6	7		
Not letting issues build up	0	1	2	3	4	5	6	7	0	1	2	3	4	5	6	7		
Shared cultural values	0	1	2	3	4	5	6	7	0	1	2	3	4	5	6	7		
Relaxation time/Time for self	0	1	2	3	4	5	6	7	0	1	2	3	4	5	6	7		
Social activity/Time with others	0	1	2	3	4	5	6	7	0	1	2	3	4	5	6	7		
Other (state):	0	1	2	3	4	5	6	7	0	1	2	3	4	5	6	7		

10. Please use this space to share anything else related to positive factors in group dynamics when working in remote environments.

Information Sheet for Survey Participants

PROJECT: Small Group dynamics in remote field camps/bases of NZ and Antarctica

RESEARCHER: Mark Brabyn Email: mbrabyn@xtra.co.nz
Phone: 027 2816180

SUPERVISORS: Daniela Liggett Email: daniela.liggett@canterbury.ac.nz
Gary Steel Email: gary.steel@lincoln.ac.nz

NAME OF DEPARTMENT: Gateway Antarctica, University of Canterbury
I am a student undertaking a project for a Postgraduate Certificate in Antarctic Studies.

The project involves a survey that investigates the effects of a range of characteristics and behaviours on group dynamics when working in isolated and remote locations such as Antarctica or the Sub-Antarctic Islands.

This project relies on data from people like yourself who have worked in groups in remote and isolated environments, and I appreciate your time to contribute to my project by completing this survey. Completing the survey should not take longer than 15-20 minutes.

Your participation in this project is entirely voluntary, and you have the right to withdraw your participation at any stage before 20 February 2014 (as I will be finalising my project report then).

The results of this project will be compiled in a final report, which you can request to access by contacting the researcher. This report may be published online or in print, but I guarantee the complete confidentiality of all data gathered in this investigation through this survey. Your identity will not be revealed in the report. To ensure anonymity and confidentiality your name will not be recorded on your survey or anywhere else. The raw data collected through the survey will be stored in a locked and secure place and can only be accessed by myself as the primary investigator and my supervisors, Daniela Liggett and Gary Steel. All data collected for the study will be destroyed by the 31st March 2014.

The project is being carried out as a requirement for a Postgraduate Certificate in Antarctic Studies by Mark Brabyn under the supervision of Daniela Liggett and Gary Steel, who can be contacted at daniela.liggett@canterbury.ac.nz and gary.steel@lincoln.ac.nz. Either of them will be pleased to discuss any concerns you may have about participation in the project.

This project has been reviewed and approved by the University of Canterbury Human Ethics Committee, and you should address any complaints to The Chair, Human Ethics Committee, University of Canterbury, Private Bag 4800, Christchurch (human-ethics@canterbury.ac.nz).

If you agree to participate in the study, you are asked to complete the consent form and return to Mark Brabyn directly or by sending it to him at 91 Jacksons Road, Lyttelton or email, mbrabyn@xtra.co.nz

Thank you for your participation.

Mark Brabyn

Consent Form

TITLE OF PROJECT: Small Group dynamics in remote field camps/bases of NZ and Antarctica.

RESEARCHER: Mark Brabyn Email: mbrabyn@xtra.co.nz Phone: 0272816180

SUPERVISORS: Daniela Liggett Email: daniela.liggett@canterbury.ac.nz

Gary Steel Email: Gary.Steel@lincoln.ac.nz

NAME OF DEPARTMENT: Gateway Antarctica, University of Canterbury

I have been given a full explanation of this project and have had the opportunity to ask questions.

I understand what is required of me if I agree to take part in the research.

I understand that participation is voluntary and I may withdraw at any time without penalty. Withdrawal of participation will also include the withdrawal of any information I have provided should this remain practically achievable.

I understand that any information or opinions I provide will be kept confidential to the researcher and the supervisors and that any published or reported results will not identify the participants.

I understand that all data collected for the study will be kept in locked and secure facilities and/or in password protected electronic form and will be destroyed by the 31st March 2014.

I understand the risks associated with taking part and how they will be managed.

I understand that I am able to receive a report on the findings of the study by contacting the researcher at the conclusion of the project.

I understand that I can contact the research student Mark Brabyn (mbrabyn@xtra.co.nz) or his supervisors, Daniela Liggett (daniela.liggett@canterbury.ac.nz) and Gary Steel (Gary.Steel@lincoln.ac.nz), for further information.

If I have any complaints, I can contact the Chair of the University of Canterbury Human Ethics Committee, Private Bag 4800, Christchurch (human-ethics@canterbury.ac.nz)

By signing below, I agree to participate in this research project.

Name

Date

Signature

Appendix 3. List of Team Building Activities

1. Moth- Bat
2. Back to Back
3. Poor Poor Tom Cat
4. Witch Watch
5. Sardines
6. Steam Rollers
7. Stiff Candle
8. Running as far as you can on one breath while screaming
9. Go Home Stay Home
10. Banana Dance
11. Whiteout
12. Ultimate Frisbee
13. Pass the orange/matchbox/stick
14. Commando course
15. Liar Dice
16. Famous People
17. Murder
18. Magic Moments
19. Card Games

Appendix 4. Questions for Raoul Applicants

Raoul Weed Team Member interviews: (for interviewer)

Please note: this is behavioural interviewing. So we are looking for a description of the situation or task, the actions you took and the results or outcomes achieved as a result of your actions.

You can use the same situation for more than one question if you think it is appropriate.

1. Your Perception

What is your perception of a typical day/week/month on Raoul? What do you perceive as some of the challenges that you might face? What do you feel will be the most and least rewarding/enjoyable aspects of life on Raoul? How will you cope with these?

How much time weeding?

How do you feel about non green practices (burning plastics)?.....Consensus?

Who do you think cleans out the sewage treatment plant?

How do you handle being told “no”? (In your own time)

Are you prepared to take risks?

How do you feel about (stupid) rules? Time wasters?

What's your pet hate?

2. Relationship Skills

Have you lived with a small group of people in a remote location? (or Have you worked in a small, close team situation?), can you describe this for us? Have you had to deal with a clash of personalities either personally or as a third party? How did you deal with it? What did you learn?

How would someone describe you?

What sort of people do you get on with/don't get on with?

How would you handle someone not pulling their weight/getting preferential treatment?

How would someone know that they have annoyed/offended you?

3. Problem Solving Skills

An isolated situation such as Raoul requires that all team members demonstrate a high degree of initiative and practicality; can you tell us about a time when you have had to use these skills to solve a complex or difficult problem?

What do you think will be the sort of problems that you will have to deal with on the Island?

Cliques and relationships form, some inclusive some exclusive have you had to deal with this sort of problem?

People can go through the “I'm over stage” how will you deal with this in yourself/in others?

If you don't know how to do something are you prepared “to have a go?”

4. Planning/Organising Skills

Can you give us an example of a project you have undertaken where you have had to plan, in detail, and implement your plan? Did you have contingency and what form did it take?

How will you be putting these skills to work on Raoul?

Have you ever been in a leadership role?

If you don't agree with a directive do you feel the leader should explain their decision?

How will you handle being involved more in the implementation stage rather than the planning and delegation?

Have you ever had a good idea rejected?

5. Risk Management & Safety

Can you give us an example of a situation where you have had to assess risk and produce a risk management plan? With respect to risk where to expect the responsibility and accountability to lie?

On a scale of 1 – 10 where would you place yourself in terms of risk and health and safety?

How do you feel about the department controlling your leisure activities and your free time?

Do you feel that there are some safety requirements that are beyond you, eg seat belt in a mule, life jacket in 2 foot of water?

Have you ever taken a shortcut ? would you?

6. Communication Skills

Can you give us an example of a situation where you have had to pass on information or knowledge to others in a field situation?

Can you describe the briefing that you would give to a group of contractors visiting Raoul?

Do you listen to aircraft briefings? Why?

How do you feel about swearing? Bad/inappropriate jokes?

How important is honesty?

Can you sense friction/conflict and how do you think the unspoken is best dealt with?

Does it matter? Is it better to let "sleeping dogs lie"?

How do you handle the unknown.....?

7. Field Skills

As you know, weed eradication and facilities maintenance are the two main work programs on Raoul, tells us about the experience you have had to prepare you for this work. Can you give us an example of your ability to do monotonous work or stick at unpleasant or unexciting tasks?

Health?

Fitness Levels?

Passed Experience?

Special requirements (dietry)?

Ropes	Climbing	Plant ID
Herbicides	Computer Skills	Track work
Boating	Operating Machinery	Tractors
Navigation	Firefighting	Coastal environment
Swimming Skills	Mechanical Skills	Medical skills
Leadership		

8. Personal motivation

Why do you want to go to Raoul?

What do you think will be the most difficult parts for you?

What do you expect to achieve personally from a year on the island?

Family Ties, Can't get off?

Handle down days?

Coming off?

Appendix 5. Taylors Pointers for Winter-Over Personnel

(Taylor, 1987)

1. Prevent boredom.
2. Settle love-life before going.
3. Set personal goals and work systematically towards them.
4. Do not cut yourself off emotionally from home.
5. Try not to be unduly affected by any sleep disturbances that arise.
6. Individuals belong to teams.
7. Make an effort to join in group activities.
8. Do not get pleasure from causing arguments.
9. Take an interest in your team-mates.
10. Accept the authority of the leader.
11. Avoid forming stronger ties with U.S. McMurdo Base than with your own team.
12. Try not to let yourself get down in the dumps.
13. Try to finish the winter as positively as you began it.
14. Be a considerate replacement